

NW Natural Gas Market Outlook

*Dan Kirschner, Executive Director
Northwest Gas Association*

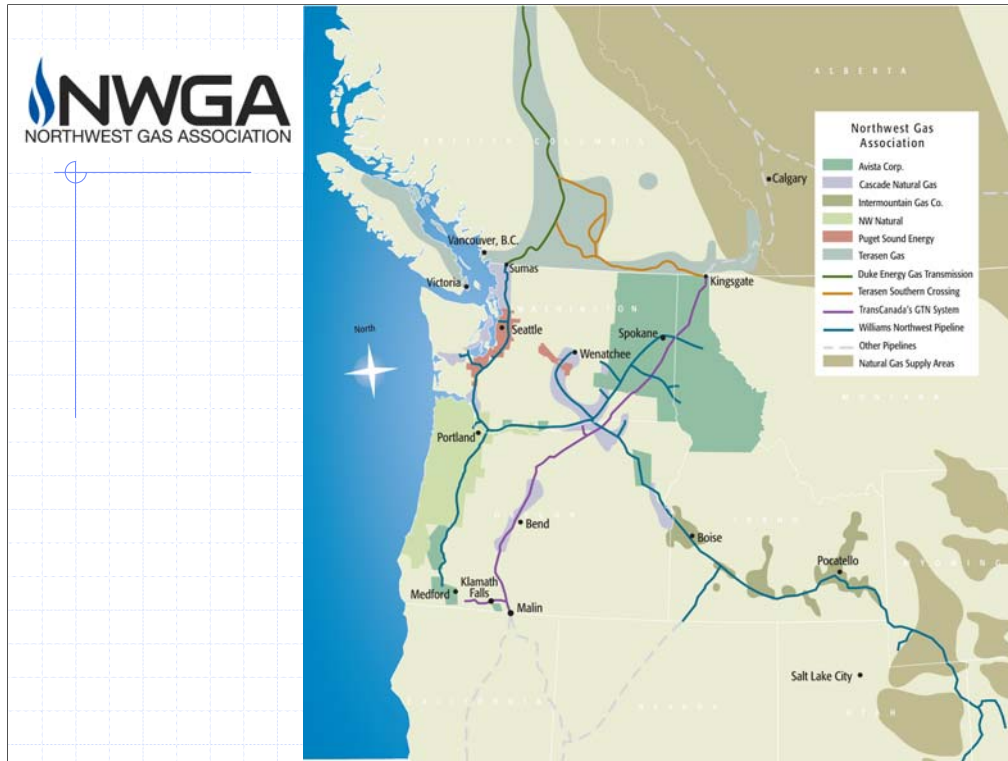
Washington Utilities and Transportation Commission
October 12, 2005



This presentation is designed to help provide a regional context for questions relative to natural gas supply and prices in the Pacific Northwest (Idaho, Oregon and Washington).

It is organized into four sections: existing and future demand for natural gas, supply availability, capacity, and factors affecting natural gas prices.

Please feel free to contact the Northwest Gas Association directly with any questions and/or comments.

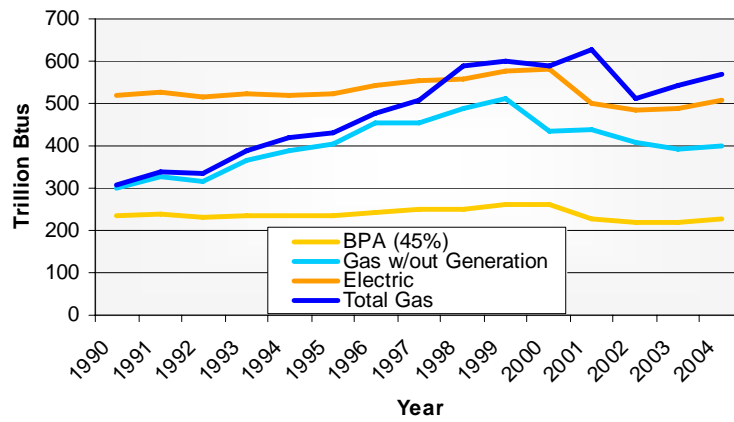


Gas a Vital Part of NW Energy Scene

(source: US Dept. of Energy, Energy Information Administration)

PNW Energy Consumption

Source: EIA

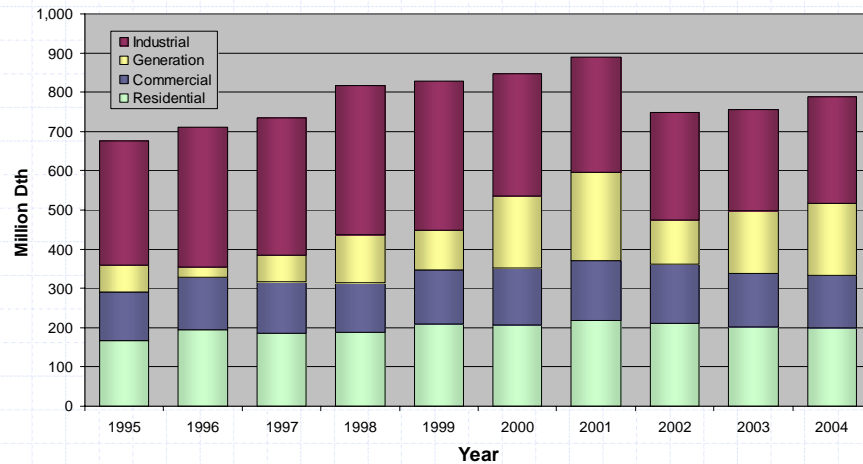




Northwest Gas Demand

Recent Gas Demand

Cumulative PNW Gas Deliveries (source: US-EIA, CAN-StatCan and TGI)



5

15% overall reduction 2000-2003

Residential/commercial – 2000-2003

8% more customers using 2% less gas (see next slide)

Industrial demand – 2000-2002

18% reduction in industrial demand

Generation – 2000-2002

34% reduction in demand

Factors include:

- western energy crisis
- economic downturn
- energy caosts
- warmer weather

Clearly, there has been some demand destruction due to economic restructuring including globalization

higher sustained gas prices have particularly affected energy intensive industries (e.g. chemical, food processing, etc.)

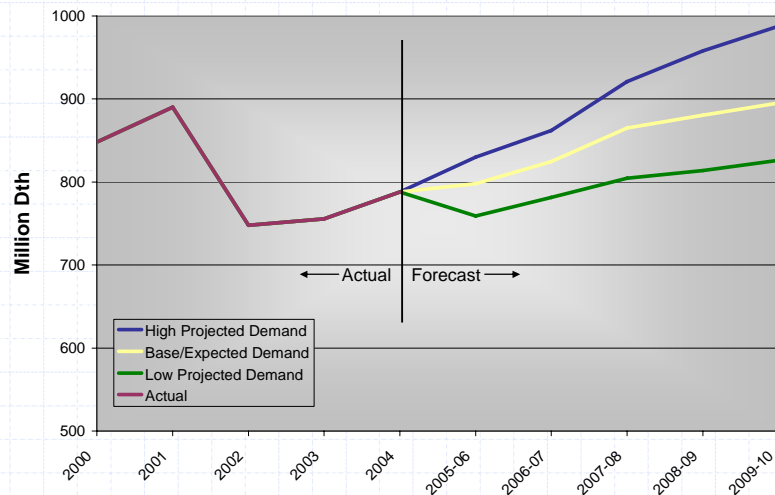
Difficult to determine w/precision how much of reduction is structural (demand destruction, weatherization, appliance upgrades, etc.) vs. more temporal (business cycle, weather patterns, turning down the thermostat, etc.)

Gas Demand Forecast

	Low Growth Case		Base (expected) Case		High Growth Case	
	Average Annual	Cumulative	Average Annual	Cumulative	Average Annual	Cumulative
Total	2.1	8.1%	2.5	9.3%	4.0	14.7%
Residential	1.7	6.6%	2.4	8.9%	3.7	13.4%
Commercial	1.4	5.2%	1.6	6.1%	2.5	9.6%
Industrial	0.2	0.5%	0.6	2.2%	0.6	2.4%
Generation	5.5	19.4%	5.9	20.4%	10.2	32.1%

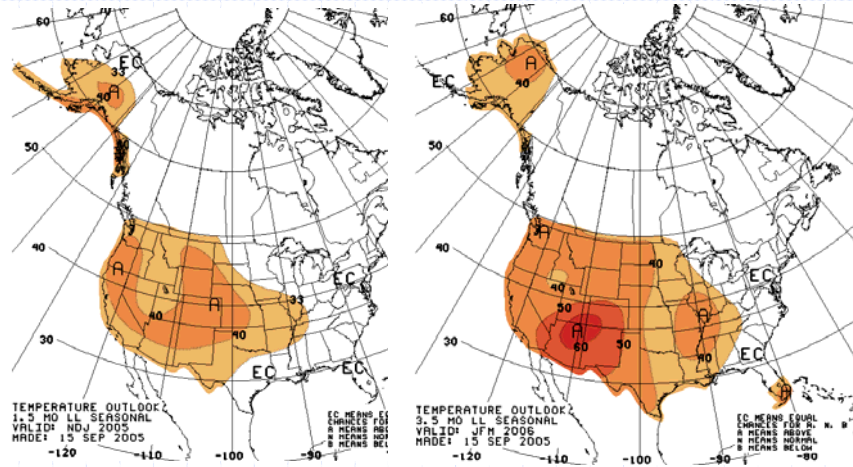
Gas Demand Forecast - Case

Annual Regional Demand Growth



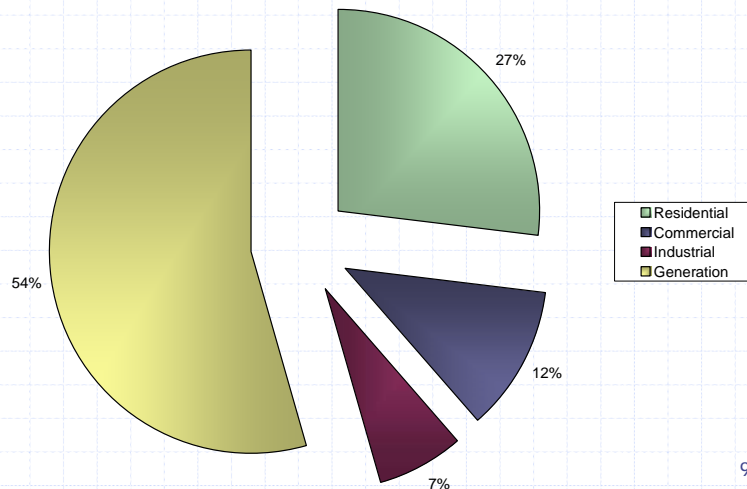
Temperature Forecast

SOURCE: National Weather Service, Climate Prediction Center, 09/15/2005



Sector Contribution to Overall Growth

Sector Contribution to Projected Regional Demand Growth
(9.3% Overall Demand Growth from 2005-06 to 2009-10 - Base Case)



9

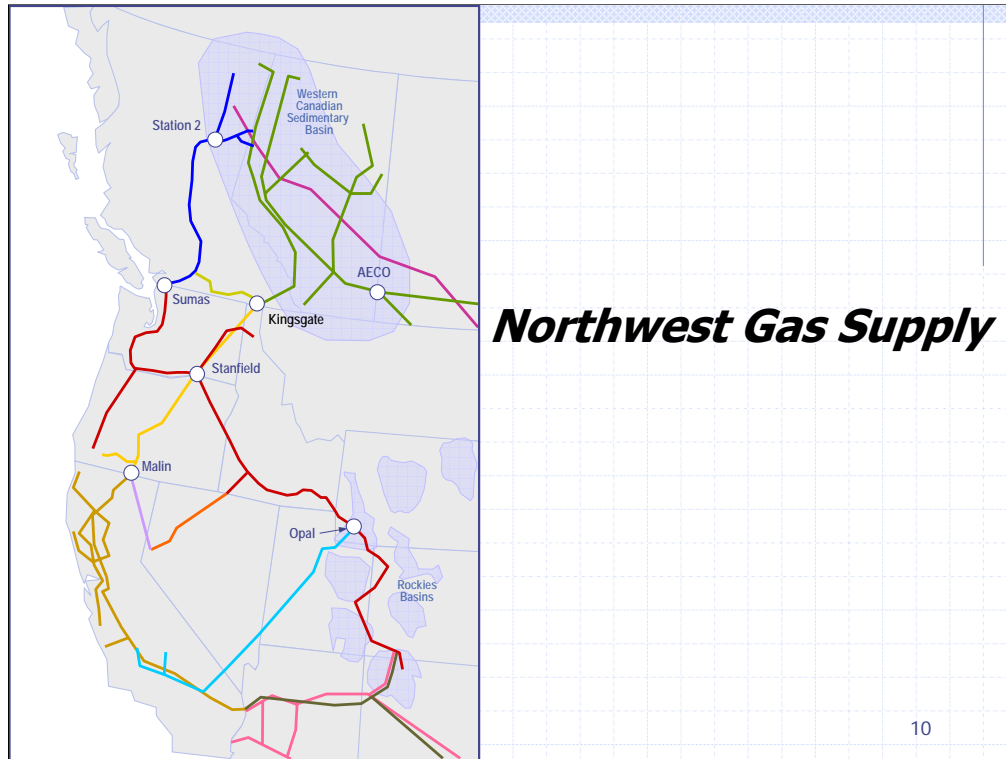
Overall growth of 3% (base) to 5% (high)

Residential, commercial and industrial:

about 2%-3% per year on average for each sector

Generation

5% to 9% (see next slide)



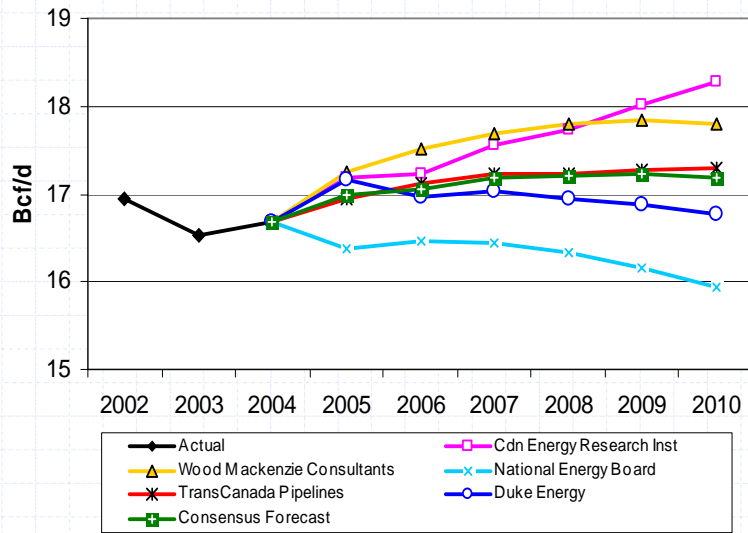
PNW draws natural gas from two primary supply basins

WCSB in Canada

US intermountain west

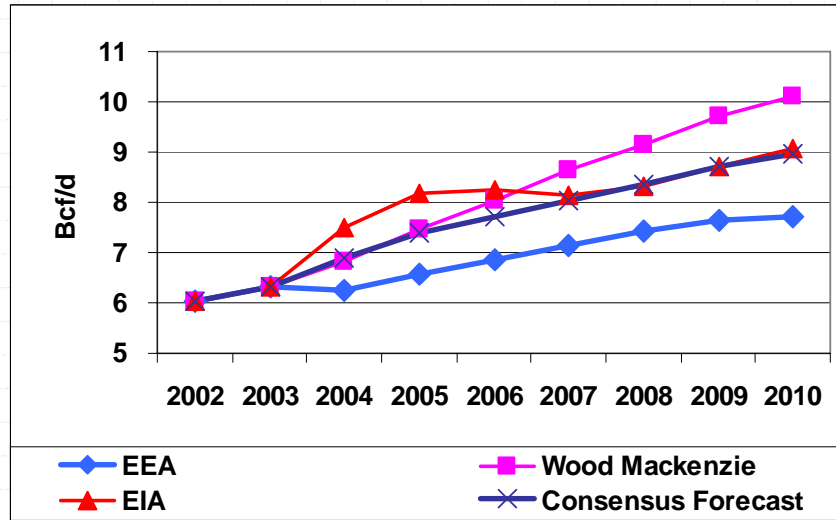
Region is well connected to both.

WCSB Production

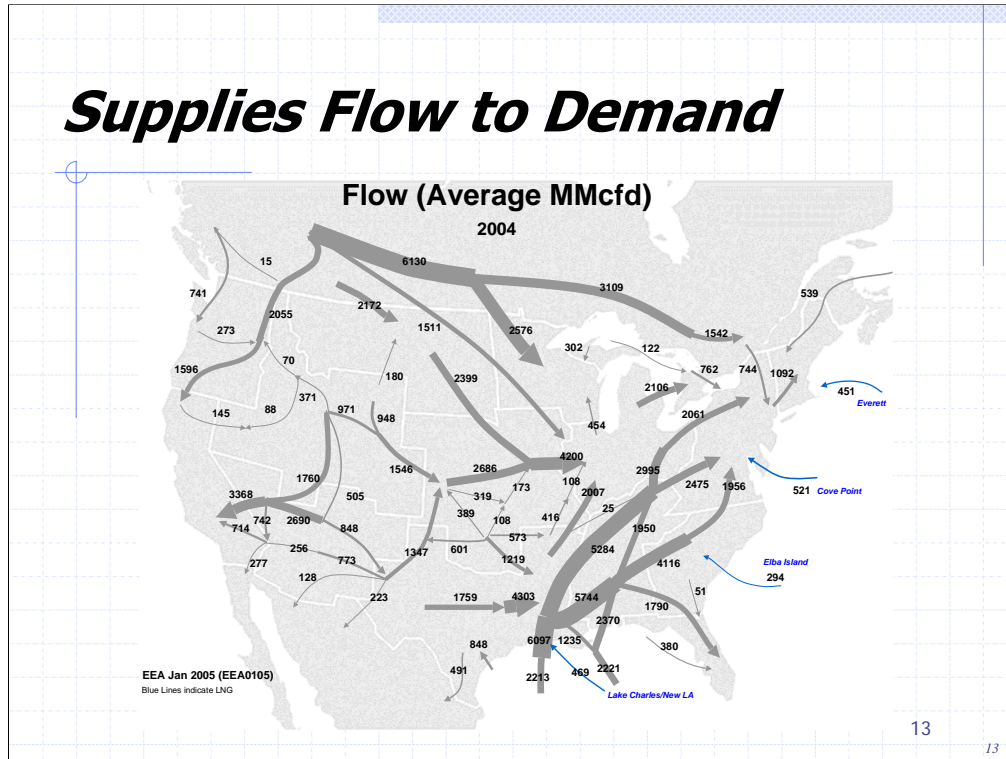


11

Rockies Production



12



The “big sucking sound from the east”

Demonstrates flow by volume of natural gas in 2002 (prior to the mid-late winter cold snaps on the East Coast)

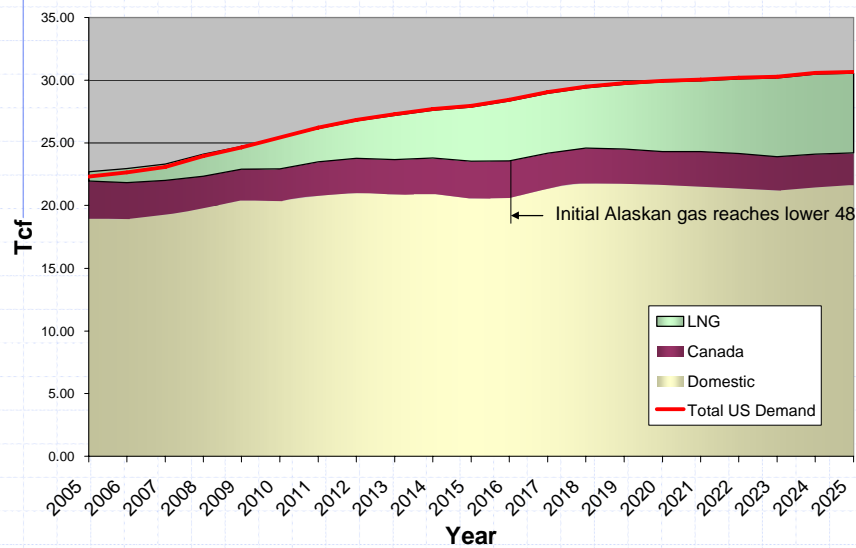
Shows increasing connectivity between NW supply sources (Rockies, Alberta/BC) and larger gas markets in the midwest and east

Explains in part why NW prices are affected by otherwise seemingly remote events (e.g. East Coast cold snap).

North American Supply

Projected US Supply/Demand Balance

(EIA Annual Energy Outlook 2005)



14

Why LNG?

- ◆ Large reserves with little or no local market.
- ◆ Pipelines impractical in most cases

(Source: BP Statistical Review of World Energy, 2005)

Country	Proved Reserves (Tcf)
Russia	1,694
Qatar	910
U.A.E.	214
Nigeria	176
Algeria	160
Venezuela	149
Indonesia	90
Australia	87
Norway	84
Malaysia	87
Egypt	66
Libya	53
Oman	35
Trinidad/ Tobago	19

LNG enables long distance shipping



Liquefying natural gas:

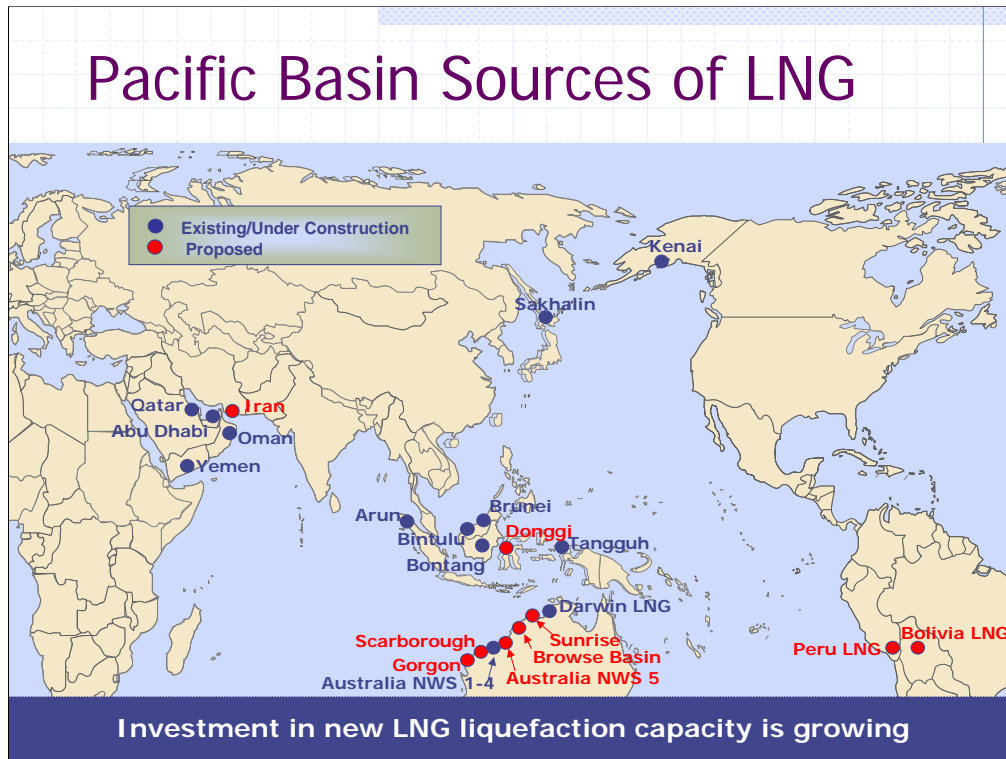
- Super-chilling it to -260°F
- Reduces volume of gas 620 times
- LNG weighs less than one-half that of water

It Must Make Economic Sense

			
EXPLORATION & PRODUCTION	LIQUEFACTION	SHIPPING	REGASIFICATION & STORAGE
\$0.5-\$1.0/MMBtu	\$0.8-\$1.20/MMBtu	\$0.4-\$1.0/MMBtu	\$0.3-\$0.5/MMBtu

Total = \$2.00 - \$3.70/MMBtu

(Source: Center for Energy Economics)



We now have a delivered LNG price to the USWC and one to Japan.

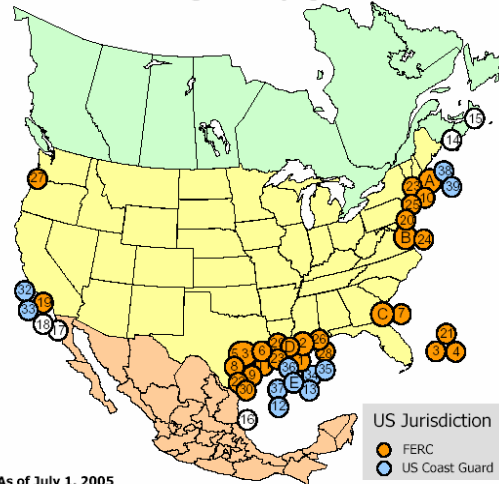
The issue is which market would a Pacific Basin LNG supplier choose to serve based on netbacks from each.

Comparative netbacks were calculated for 5 of the representative suppliers that could serve both markets.

This map shows the suppliers, the routes, distances in nautical miles and the shipping costs in real 2004 \$US/MMBtu.

Let's start with Sakhalin. From there, it costs only a quarter to deliver to Japan vs. about \$0.70 to deliver to Costa Azul on the western shore of North America. Sakhalin would clearly prefer Japan.

Existing and Proposed North American LNG Terminals



As of July 1, 2005

* US pipeline approved; LNG terminal pending in Bahamas

Office of Energy Projects

CONSTRUCTED

- A. Everett, MA : 1.035 Bcfd (Tractebel - DOMAC)
- B. Cove Point, MD : 1.0 Bcfd (Dominion - Cove Point LNG)
- C. Elba Island, GA : 0.68 Bcfd (El Paso - Southern LNG)
- D. Lake Charles, LA : 1.0 Bcfd (Southern Union - Trunkline LNG)
- E. Gulf of Mexico: 0.5 Bcfd, (Gulf Gateway Energy Bridge - Excelerate Energy)

APPROVED BY FERC

1. Lake Charles, LA: 1.1 Bcfd (Southern Union - Trunkline LNG)
2. Hackberry, LA : 1.5 Bcfd, (Semptra Energy)
3. Bahamas : 0.84 Bcfd, (AES Ocean Express)*
4. Bahamas : 0.83 Bcfd, (Calypso Tractebel)*
5. Freeport, TX : 1.5 Bcfd, (Cheniere/Freeport LNG Dev.)
6. Sabine, LA : 2.6 Bcfd (Cheniere LNG)
7. Elba Island, GA: 0.54 Bcfd (El Paso - Southern LNG)
8. Corpus Christi, TX: 2.6 Bcfd, (Cheniere LNG)
9. Corpus Christi, TX : 1.0 Bcfd (Vista Del Sol - ExxonMobil)
10. Fall River, MA : 0.8 Bcfd, (Weaver's Cove Energy/Hess LNG)
11. Sabine, TX : 1.0 Bcfd (Golden Pass - ExxonMobil)

APPROVED BY MARAD/COAST GUARD

12. Port Pelican: 1.6 Bcfd, (Chevron Texaco)
13. Louisiana Offshore : 1.0 Bcfd (Gulf Landing - Shell)
14. St. John, NB : 1.0 Bcfd, (Canaport - Irving Oil)
15. Point Tupper, NS : 1.0 Bcfd/d (Bear Head LNG - Anadarko)

MEXICAN APPROVED TERMINALS

16. Altamira, Tamaulipas : 0.7 Bcfd, (Shell/Total/Mitsui)
17. Baja California, MX : 1.0 Bcfd, (Semptra & Shell)
18. Baja California - Offshore : 1.4 Bcfd, (Chevron Texaco)

PROPOSED TO FERC

19. Long Beach, CA : 0.7 Bcfd, (Mitsubishi/ConocoPhillips - Sound Energy Solution)
20. Logan Township, NJ : 1.2 Bcfd (Crown Landing LNG - BP)
21. Bahamas : 0.5 Bcfd, (Seafarer - El Paso/FPL)
22. Corpus Christi, TX : 1.0 Bcfd (Ingleside Energy - Occidental Energy Ventures)
23. Port Arthur, TX : 1.5 Bcfd (Semptra)
24. Cove Point, MD : 0.8 Bcfd (Dominion)
25. LI Sound, NY : 1.0 Bcfd (Broadwater Energy - TransCanada/Shell)
26. Pascagoula, MS: 1.0 Bcfd (Gulf LNG Energy LLC)
27. Bradwood, OR: 1.0 Bcfd (Northern Star LNG - Northern Star Natural Gas LLC)
28. Pascagoula, MS: 1.3 Bcfd (Casotte Landing - ChevronTexaco)
29. Cameron, LA: 3.3 Bcfd (Creole Trail LNG - Cheniere LNG)
30. Port Lavaca, TX: 1.0 Bcfd (Calhoun LNG - Gulf Coast LNG Partners)
31. Freeport, TX: 2.5 Bcfd, (Cheniere/Freeport LNG Dev. - Expansion)

PROPOSED TO MARAD/COAST GUARD

32. California Offshore: 1.5 Bcfd (Cabrillo Port - BHP Billiton)
33. So. California Offshore : 0.5 Bcfd, (Crystal Energy)
34. Louisiana Offshore : 1.0 Bcfd (Main Pass McMillan Exp.)
35. Gulf of Mexico: 1.0 Bcfd (Compass Port - ConocoPhillips)
36. Gulf of Mexico: 2.8 Bcfd (Pearl Crossing - ExxonMobil)
37. Gulf of Mexico: 1.5 Bcfd (Beacon Port Clean Energy Terminal - ConocoPhillips)
38. Offshore Boston, MA: 0.4 Bcfd (Neptune LNG - Tractebel)
39. Offshore Boston, MA: 0.8 Bcfd (Northeast Gateway - Excelerate Energy)

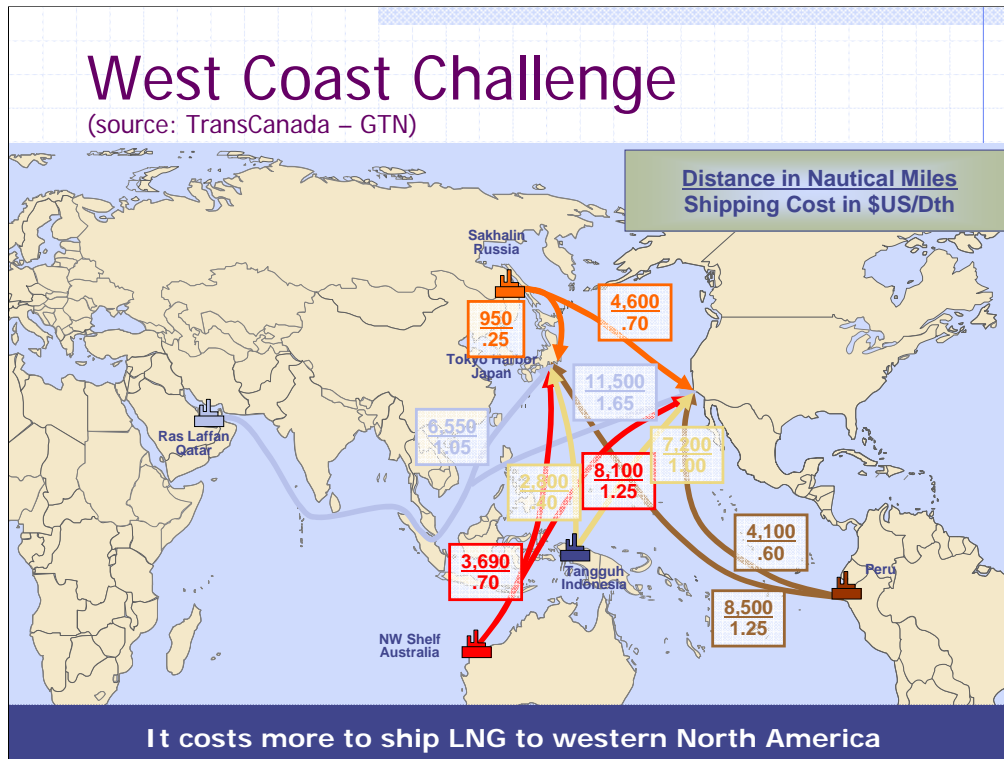
Northwest LNG Proposals

- ① Port Westward
- ② Skipanon Channel
- ③ Jordan Cove
- ④ Bradwood Landing
- ⑤ Tansy Point
- ⑥ Kitimat
- ⑦ Prince Rupert

Challenges include:

- Local acceptance
- Permitting
- Commercial considerations:
 - economies of scale
 - takeaway infrastructure
 - supplier commitment





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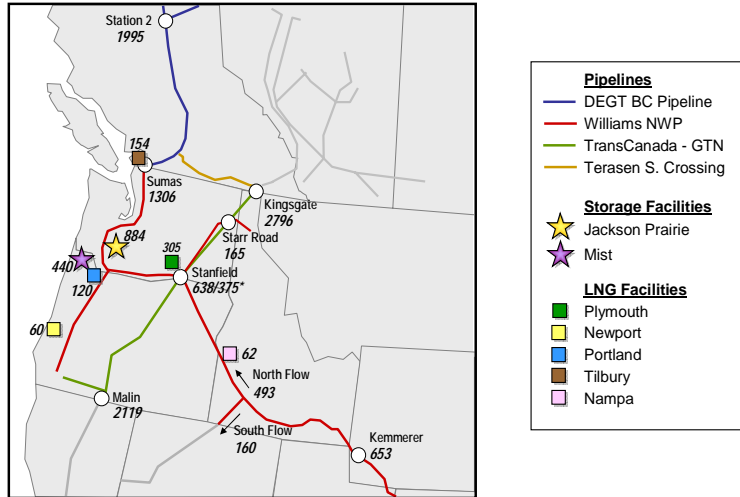
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Northwest Gas Infrastructure

Storage/Interconnect Capacities

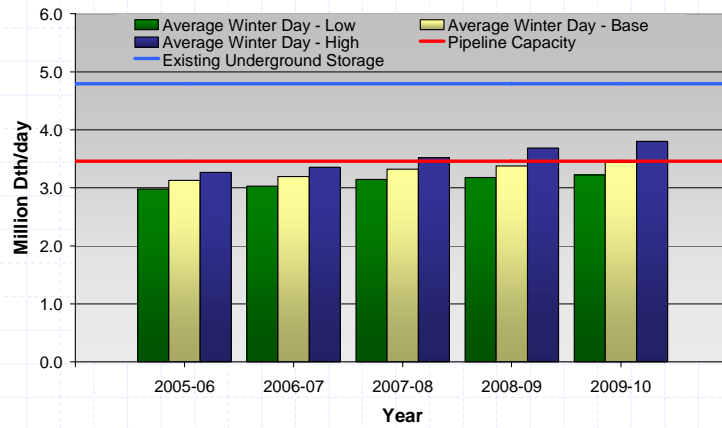
Capacity at Major Interconnects & Storage Facilities (Dth/day)



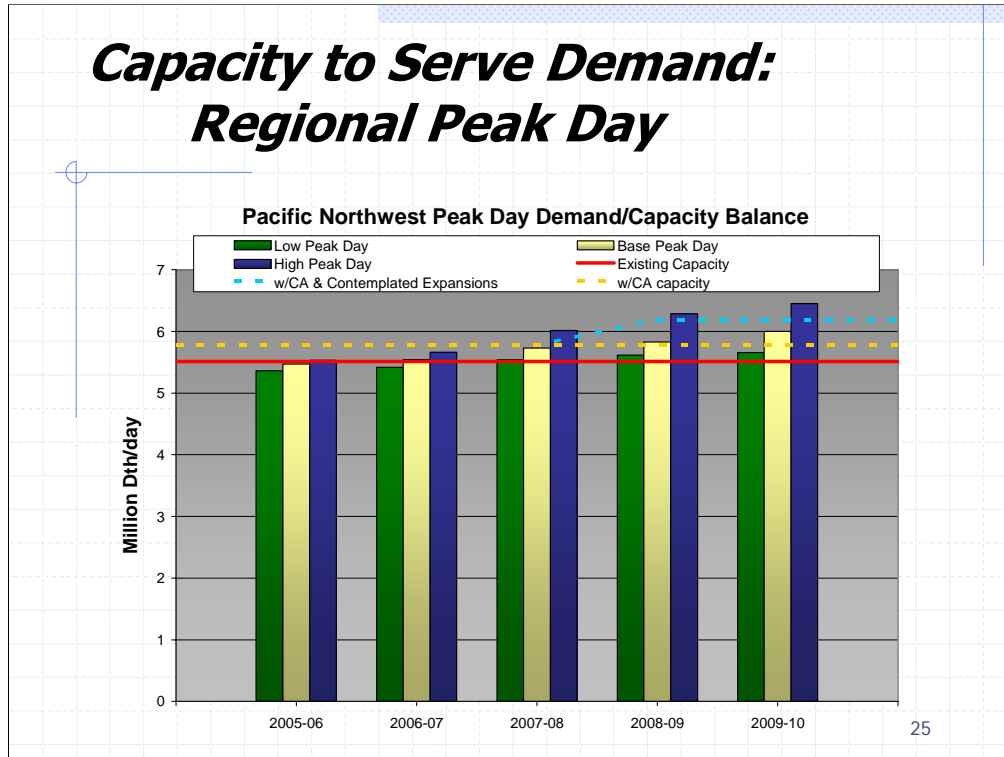
* Receipt capacity on NWP / Delivery Capacity from GTN less Contracts to Malin

Capacity to Serve Demand: Average Winter Day

Pipeline & Storage Capacity vs Average Winter Day Demand
(ID, OR, WA, BC)



Capacity to Serve Demand: Regional Peak Day



Start w/conclusions

- Does not necessarily mean curtailment

- Does mean yellow flag

- Diminishing system capacity

Capacity line demonstrates a 2004 increase in Mist deliverability. Also shows a slight decline in available capacity as upstream (BC) loads grow. Starting point and ending point are almost identical.

No pipeline expansions currently being pursued. Additional capacity enhancements (e.g. pipeline, storage deliverability, LNG, etc.) reflected in future iterations as they become more certain.

Assumptions include:

- None of the capacity obligated outside the region is available to the region on a peak

- Coincident peak day throughout the region (Vancouver, Seattle, Portland, Spokane, Boise)

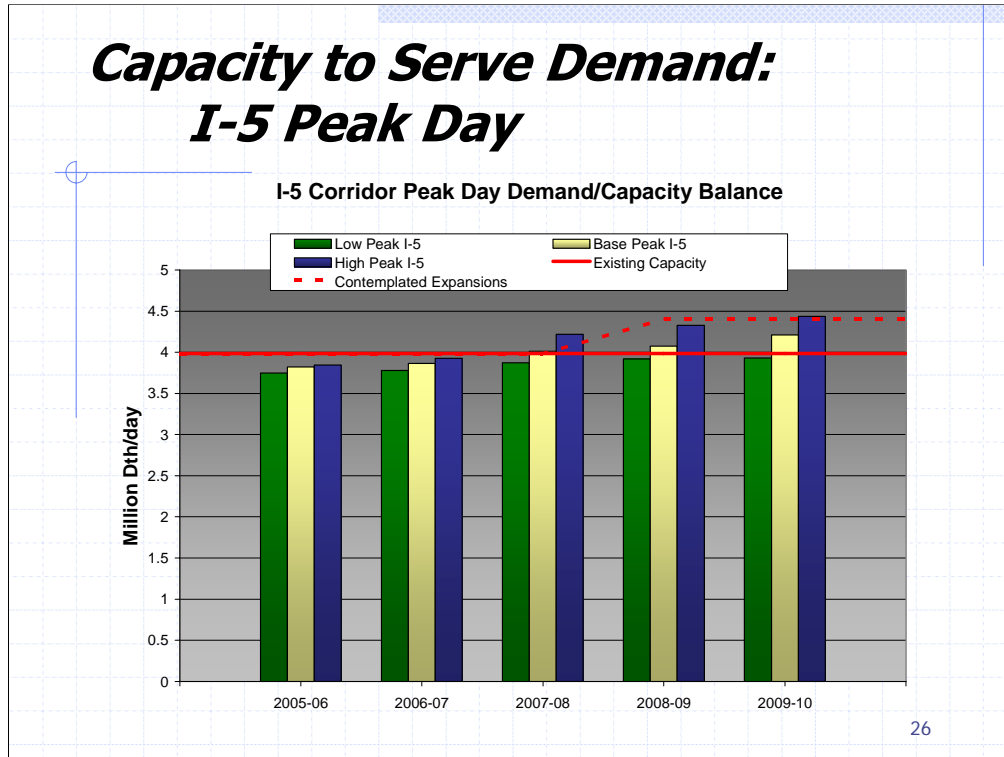
- NW Pipeline and all other infrastructure elements (storage/LNG) able to operate at full capacity

- No secondary capacity release market

Highlight conservative nature of chart

Might be interesting to describe peak day planning (LDCs) v load factor planning (pipelines)

Capacity to Serve Demand: I-5 Peak Day



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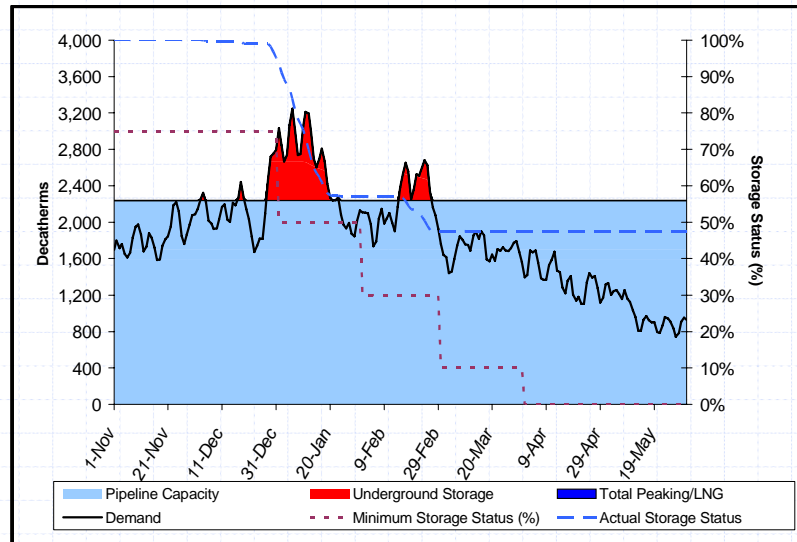
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Capacity to Serve Demand: Extended Winter – Moderately Cold (15%)



27

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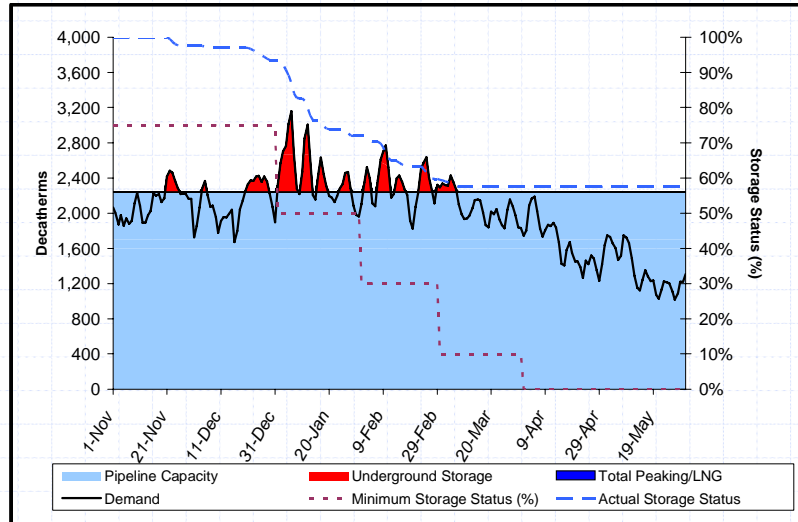
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Capacity to Serve Demand: Extended Winter – Low Hydro (2001)



28

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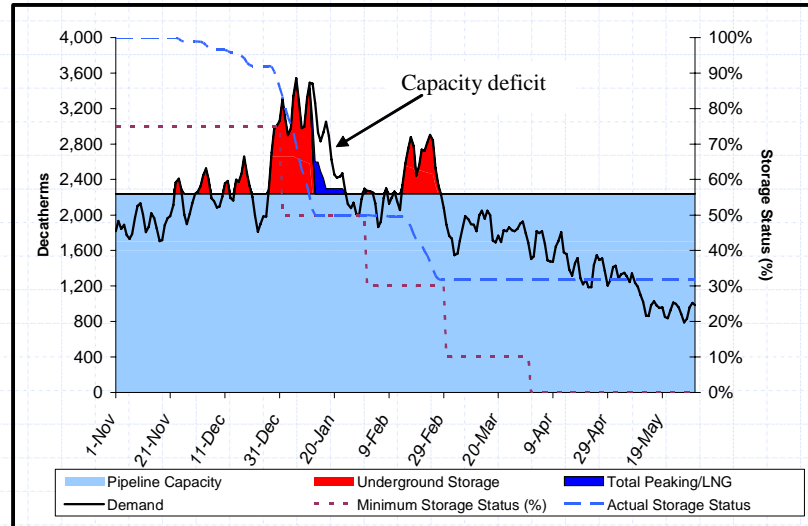
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29

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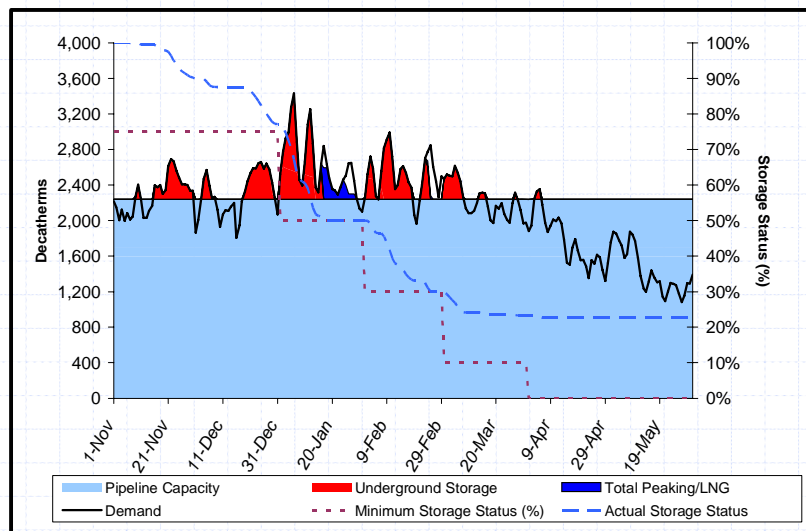
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Capacity to Serve Demand: Extended Winter – Low Hydro High Demand



30

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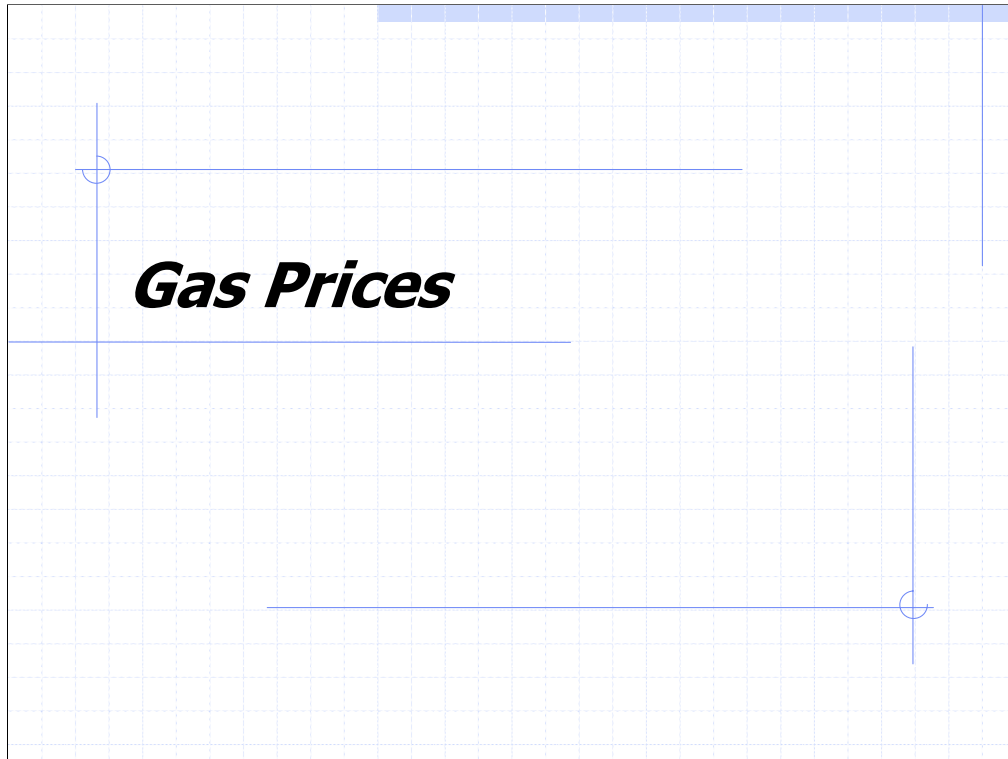
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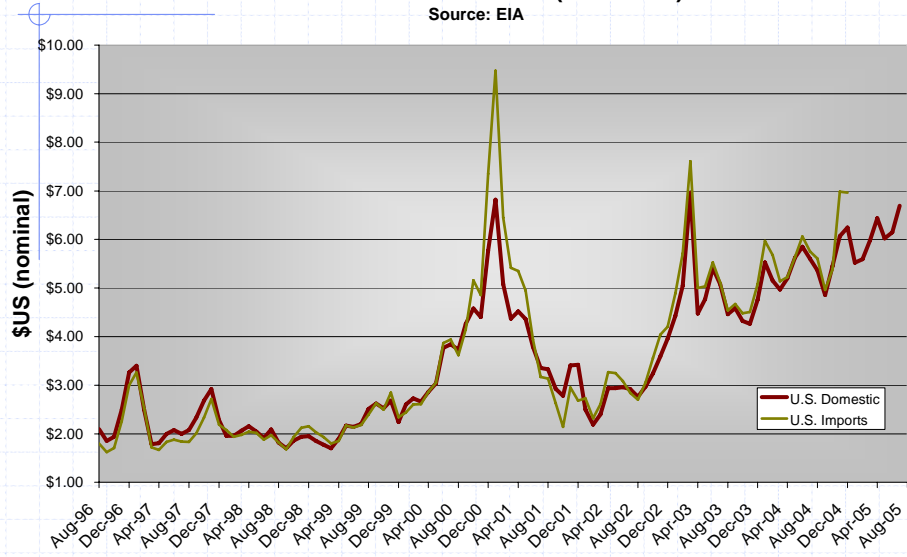
32

Explains in part why NW prices are affected by otherwise seemingly remote events (e.g. East Coast cold snap).

Recent Prices

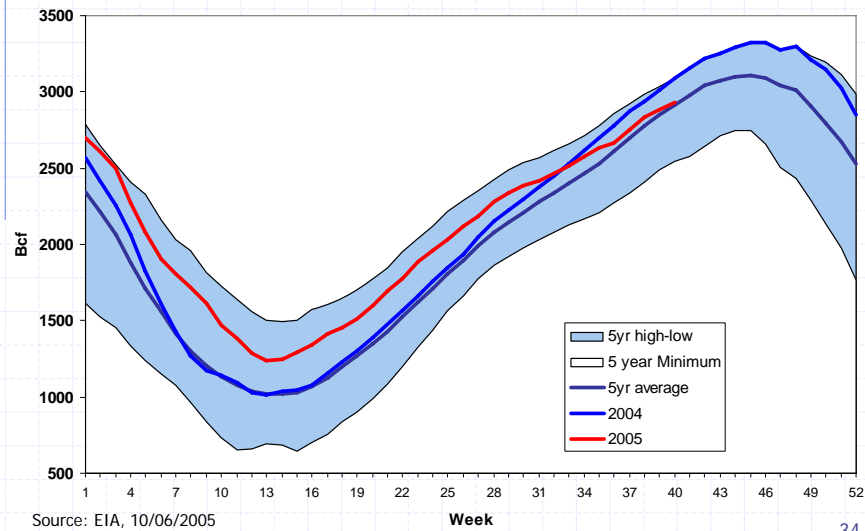
U.S. Natural Gas Prices (Domestic)

Source: EIA



33

Storage Seems a Moot Point...

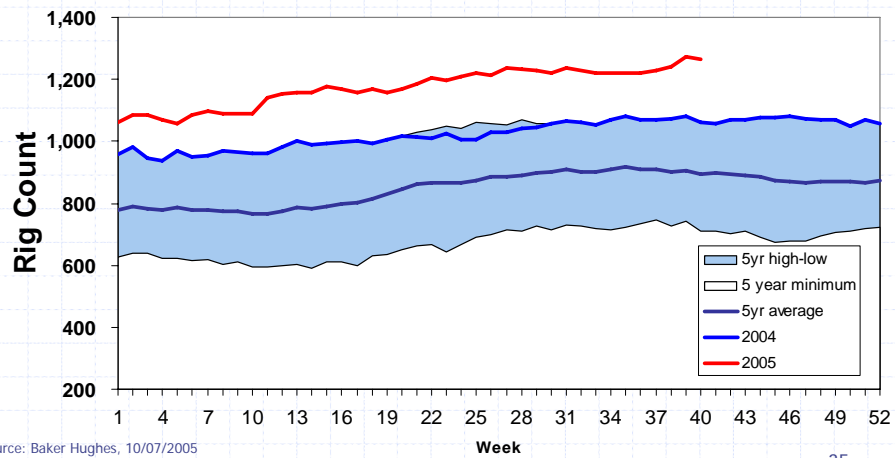


34

34

...as does Drilling Activity

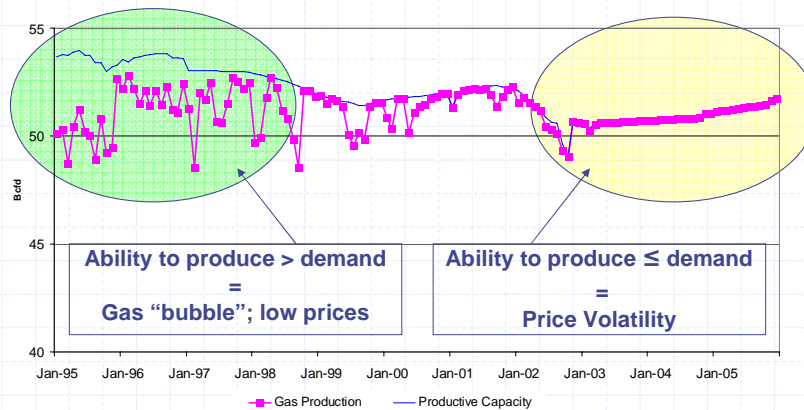
U.S. Gas Rigs In Operation



Source: Baker Hughes, 10/07/2005

35

Productive Capacity Has an Impact...

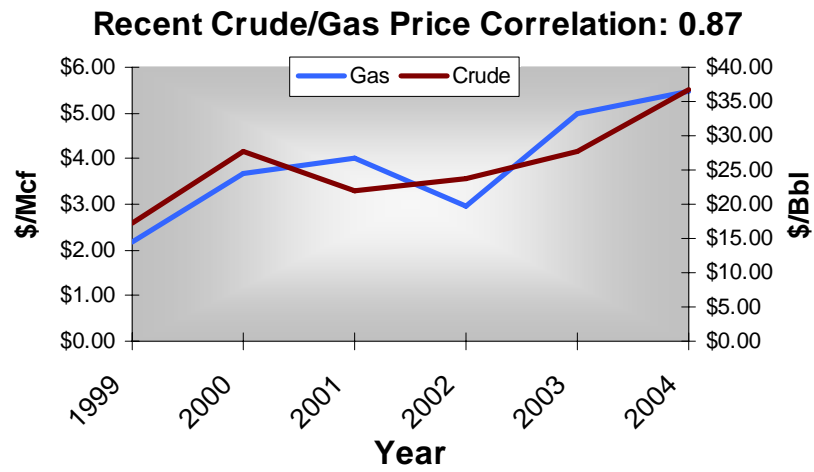


Source: Energy and Environmental Analysis

36

- Today, lower-48 natural gas production capability is matched by requirements from actual production.
- The natural gas bubble no longer exists on any sustained basis.
- This is not expected to change dramatically during the next five years.
- It can be argued that the tight relationship of production to production capability will remain unchanged for the foreseeable future.

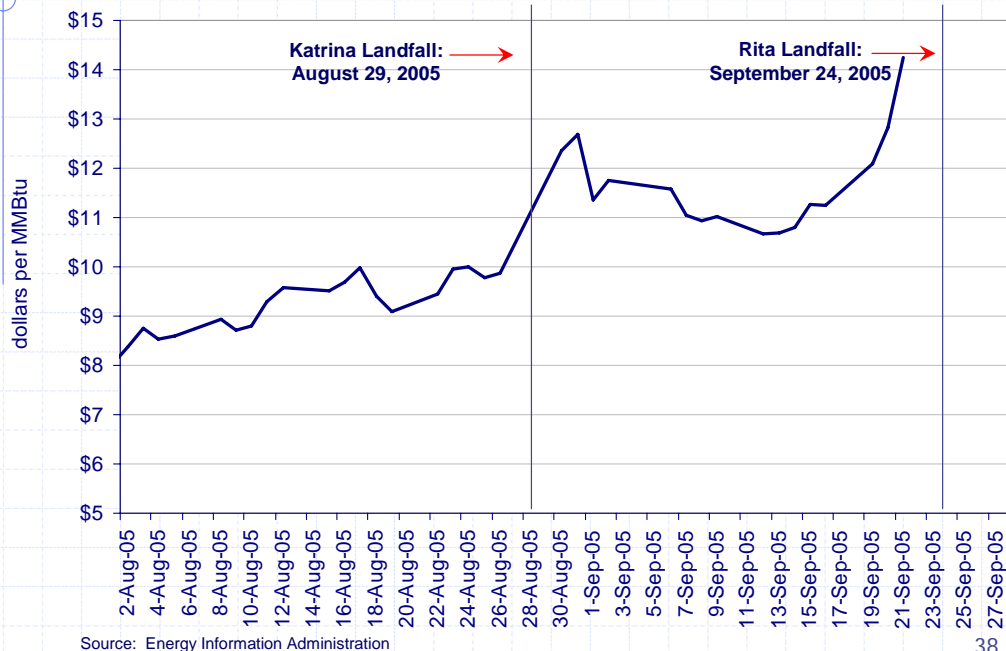
...As Does the Price of Oil.



Source: EIA

37

Dramatic Near Term Impact From Hurricanes Katrina, Rita



The graph shows the impact of Katrina and Rita on price over the last two months. Natural gas prices which were already at historically high prices have effectively doubled over the past two months.

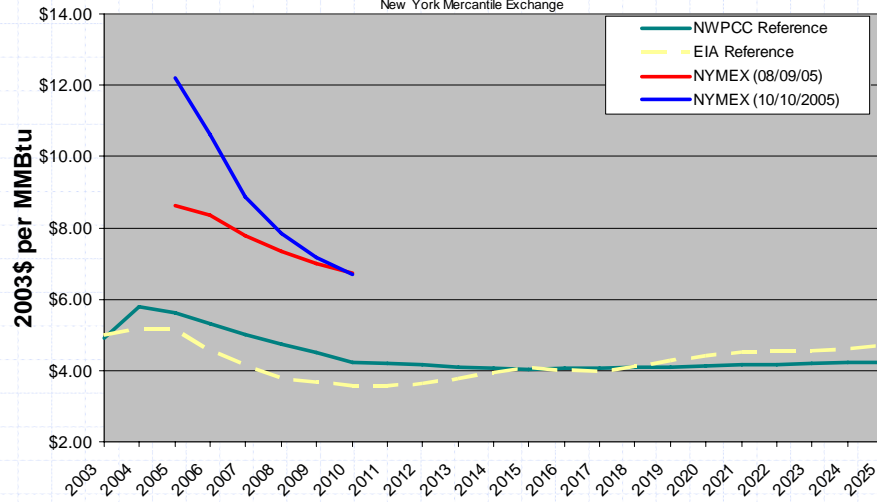
Supply and demand are meeting at this completely different price point these days – and not just in Houston, or New Orleans or Atlanta or Charlotte but everywhere in north America. If natural gas prices are any indication, the north American village has just gotten smaller

Updated data not available due to Henry Hub Force Majeure.

The Future...

Projected Range of Regional Natural Gas Prices

EIA, 2005 Annual Energy Outlook
Northwest Power and Conservation Council - 5th Power Plan, January, 2005
New York Mercantile Exchange



Key Conclusions...

- ◆ Plenty of gas but N.A. production not keeping up with demand
 - Region will benefit from incremental supplies
 - Increased reliance on LNG
 - Frontier gas is vital
- ◆ Demand will continue to grow in the region
 - Gas for generation largest driver
- ◆ Capacity is adequate to serve the region
 - Stressed under extreme circumstances
 - Securing firm capacity wise
 - Permitting and regulatory processes must be nimble
- ◆ Prices will remain strong over the near term
 - Public policy can affect prices over the longer term

40



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